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IDENTIFICATION, DISTRIBUTION, AND HABITAT OF NEEDLE-LEAVED *HYPERICUM* (HYPERICACEAE) IN THE SOUTHEASTERN UNITED STATES

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ABSTRACT

Shrub species of *Hypericum* with needle-like leaves continue to present identification challenges, despite stable taxonomy since the 1960s. Here I provide an improved key, identification notes, habitats, and range maps for nine species of the North American coastal plain.

KEY WORDS: *Hypericum*, Hypericaceae, identification, distribution, habitat.

The "needle-leaved" *Hypericum* shrub species have been problematic for two centuries. Many of the species treated in this paper were not recognized or had been synonymized under *H. fasciculatum* Lam. or *H. galioides* Lam. until W.P. Adams' groundbreaking publication (Adams 1962). Prior to then, there was abundant misinformation regarding species limits, morphology, habitat, and distribution. Adams borrowed specimens from 36 herbaria, so there are a large number of correctly identified specimens that serve as a reference base. Nonetheless, botanists continue to have difficulty with the group, in part due to the large percent of incorrectly determined specimens in herbaria. Adams' summary of southeastern USA *Hypericum* (1973) and Robson's treatment of section *Myriandra* (1996) are derivative from the 1962 work and incorporate updated information. Godfrey and Wooten (1981) and Godfrey (1988) made significant improvements to species descriptions and habitat statements; Godfrey (1988) illustrated eight of the nine species. The most recent taxonomic treatment is that of Crockett (2000), which recognizes the same species as Adams (1962).

METHODS

The current study was conducted over a period of twenty five years while gathering specimen information on endemic species of the North American coastal plain. Specimens annotated by W.P. Adams served as a baseline for my research, augmented by several iterations of newly constructed keys and my own annotations. I examined specimens at DUKE, FLAS, FSU, GA, GH, MISSA, NCSC, NCU, TEX-LL, USCH, USF, and VDB. Leaf measurements were made of the *longest* leaves on individual plants; normally these occur at branch nodes. Only mature plants were used in this study; sprouts and seedlings produce elliptical, blunt-tipped leaves strikingly divergent from adult plants.

RESULTS AND DISCUSSION

Leaf morphology

The linear leaves of this group of species are needle-like; that is, they are flattened in cross-section similar to a conifer needle, with the adaxial surface plane. The leaf margins are parallel until the abruptly pointed tip. These species have margins that are termed "revolute" by authors; however, they are revolute to an extreme degree, unlike the normal meaning of the term as "rolled under" or "curved towards the midrib." In this group, margins are abruptly bent under and form an angle with the adaxial surface such that the margins nearly or actually touch the midrib (see illustrations in

Godfrey 1988). Normally, only the midrib and the margins (each with several round punctations) are visible on the abaxial side, with none of the true abaxial leaf surface visible. Moreover, the margins are fused to the abaxial surface, making it virtually impossible to "unroll" the margins. In *H. fasciculatum* and *H. tenuifolium* Pursh (and to a lesser extent in other species) the midrib is raised such that the narrow space between the leaf margins and the midrib forms two elongate grooves. However, these grooves are often very shallow—a situation which has caused some confusion when botanists try to understand what authors mean by "groove" when there appears to be none. In other species, such as *H. nitidum* Lam., *H. brachyphyllum* (Spach) Steudel, and H. *exile* P. Adams, the midrib is slightly raised or not at all, such that the two-grooved aspect is lost; there appears to be a single broad groove or trough with the midrib at the bottom. Note: on any given specimen there may be a few leaves that show a narrow strip of abaxial surface on either side of the midrib; it is not known whether this is caused by pressing/drying or whether it occurs naturally in life. When attempting to identify specimens of needle-leaved *Hypericum*, it is imperative to examine a number of leaves before deciding on morphological characters.

One apparently unrelated species, *Hypericum galioides*, is included in this paper because its normally flat (or slightly revolute) leaves often become strongly revolute in pressing, such that they take on the appearance of needle-leaved species. Slender-leaved populations of the widespread *H. galioides* have been the cause of many misidentifications and misattributions of range within the needle-leaved complex (e.g., Brown & Gandhi 1989). However, in every slender-leaved *H. galioides* specimen examined, many leaves clearly showed the abaxial surface. In addition, leaves of *H. galioides* are oblanceolate or oblinear, contrary to the parallel sides of true members of the needle-leaved complex. Finally, the adaxial surface of the leaves of *H. galioides* is convex, whereas it is plane in *H. brachyphyllum, H. fasciculatum,* and other potentially confounding species.

Plant height

Needle-leaved hypericums conveniently fall into two groups: short species normally less than 0.5 meters tall (*H. lloydii* (Svenson) P. Adams, *H. tenuifolium*) and tall species normally 1–2+ meters tall (*H. chapmanii* P. Adams, *H. fasciculatum, H. galioides, H. lissophloeus* P. Adams, *H. nitidum*). Two species are intermediate in height: *H. brachyphyllum* ranges from 0.5 to 1.0 m tall, with occasional individuals to 1.5 m (fide Adams 1962 and Godfrey & Wooten 1981); *H. exile* ranges from about 0.4 to 1 m tall, or a bit more.

Key to the species

In the key I offer more than one character in each couplet, in part because the variability of each species is such that a single character may not distinguish one species from another and in part to facilitate identification whether vegetative, fruiting, or flowering. In the key "nodes" refers to flowers in axillary nodes as well as the terminal cyme.

1. Longest leaves 5–16 mm.

    2. Adaxial leaf surface convex, merging gradually with revolute margin; leaf shape oblanceolate or linear-oblanceolate ..... **Hypericum galioides**
    2. Adaxial leaf surface plane, abruptly angled to revolute portion; leaf shape linear.

        3. Capsules 6–9 mm long; longest leaves 5–10(–11) mm; corollas 13–15 mm diameter; plants of spodosol flatwoods and interdunes ..... **Hypericum tenuifolium**
        3. Capsules 3–4.5 mm long; longest leaves 7–16 mm; corollas 13–17 mm diameter; plants of alfisols and ultisols of wet pine savannas, flatwoods, seepage bogs **Hypericum brachyphyllum**

1. Longest leaves 13–30 mm.

4. Plant a shrublet or low shrub <4 dm tall, more or less decumbent, forming dense patches; inflorescence elongate (flowers at up to 5 nodes); corollas 10–12 mm diameter; dry to mesic soils of lower piedmont and inner coastal plain of se VA-NC-SC-GA-c AL; disjunct to rock outcrops of s GA ..... **Hypericum lloydii**
4. Plant an erect shrub 0.5–4 m tall, with single main stem branched above; inflorescence elongate (3–7 nodes) or short (1–3 nodes in *H. fasciculatum* and *H. chapmanii*); corollas 13–26 mm diameter; wet soils of coastal plain.

5. Abaxial surface of most leaves easily seen on both sides of midrib, veins usually obvious on undersurface, leaves oblanceolate to oblinear, (1.0–)1.5–5(–7) mm wide; inflorescence elongate (3–7 nodes) ..... **Hypericum galioides**
5. Abaxial surface usually not seen except for midrib (leaf margins nearly touch midrib along its whole length), if undersurface visible then no veins visible, leaves linear, needle-like, parallel-sided, 0.5–1.5 mm wide; inflorescence elongate or short.

6. Plant short, <1 m tall; stem <1 cm wide at base; plant unbranched or few-branched, wand-like with narrow crown; restricted to FL panhandle ..... **Hypericum exile**
6. Plant tall, normally >0.8 m; stem 1–several cm wide at base; crown broader with many ascending to spreading branches.

7. Young branches, leaves, and sepals strongly glaucous; bark of upper stem and branches silvery gray and smooth; mature plant 2–4 m tall with ascending branches imparting tree-like or vase-like aspect; restricted to shores of sinkhole ponds in Bay and Washington cos., FL ..... **Hypericum lissophloeus**
7. Young branches, leaves, and sepals not glaucous; bark of upper stem and branches not silvery gray and smooth (except some *H. chapmanii*); mature plants variously shaped.

8. Inflorescence elongate (3–7 nodes); stem bark tight, thin, not exfoliating or exfoliating in narrow strips, not revealing buff or pale cinnamon color; if leaf undersurface is exposed it is distinctly paler than upper surface; usually associated with flowing water (blackwater streams and impoundments) ..... **Hypericum nitidum**
8. Inflorescence short (1–3 nodes). Stem bark corky-thickened to spongy, exfoliating in broad strips or sheets revealing buff or pale cinnamon color; if leaf undersurface is exposed it is about the same color as upper surface; usually associated with static water (Carolina bays, impoundments, beaver ponds, borrow pits, flatwoods depressions, cypress-gum ponds).

9. Mature plant 2–3 (–4) m tall; branches ascending and imparting a tree-like or vase-like aspect (younger plants may be bushy); youngest internodes terete; restricted to flatwoods depressions and cypress-gum ponds of FL panhandle ..... **Hypericum chapmanii**
9. Mature plant 0.8–1.5 m tall; branches spreading and imparting a bushy or gumdrop aspect; youngest internodes with distinct winged ridge on either side; Carolina bays, impoundments, beaver ponds, borrow pits, widespread ..... **Hypericum fasciculatum**

SPECIES NOTES

1. Hypericum brachyphyllum (Spach) Steud. is intermediate in stature, but its leaves average shorter than all species except *H. tenuifolium*. North Carolina plants are shorter in height than elsewhere, normally less than 5 dm. Flowers are produced at 3–5 nodes. Unusually tall individuals

may be told from *H. fasciculatum* and *H. nitidum* by characters in the key, plus its later flowering period (July–August vs. late May–early July).

Recently *Hypericum brachyphyllum* has been reported from western Louisiana (Robson 1996: Vernon Par.: Anacoco, *Demaree 50849* (BM). There are specimens at NCU, USF, TEX-LL, and VDB that appear to be this species, collected from more than a dozen sites in eastern Texas and western Louisiana. However, all of these specimens prove to be *H. galioides,* including a duplicate of *Demaree 50849* at NCU. These specimens have unusually slender leaves, but the abaxial side of some to many leaves show exposed leaf surface rather than merely a groove on either side of the midrib. See *H. galioides* text for additional identification criteria. *H. brachyphyllum* inhabits wet pine flatwoods and pitcher plant seepage bogs. Range map 1.

Adams (1962) thought that *Hypericum limosum* Griseb. of western Cuba might be synonymous with *H. brachyphyllum*, but opted to wait for better specimens; Robson (1996) treated *H. limosum* as a good species. I have not seen enough specimens to make an informed decision.

2. Hypericum chapmanii P. Adams and *H. lissophloeus* are by far the tallest of the group, reaching 3–4 meters. Both usually look like small slender scruffy trees, although some *H. chapmanii* can be as short as *H. fasciculatum* and have a bushy-branched aspect. *Hypericum chapmanii* and *H. fasciculatum* have flowers in a terminal cyme plus 1–2(–3) axillary nodes, unlike the rest of the group, which have flowers in 3–7 nodes. From *H. fasciculatum*, *H. chapmanii* can be distinguished by the greater development of thick corky bark, which has large, vertical, pale lactifers that stand out in contrast to the bark color. From *H. lissophloeus*, *H. chapmanii* can be distinguished by green, non-glaucous leaves (but beware that some *H. lissophloeus* leaves are merely glaucescent), smaller flowers (15–16 mm diameter vs. 20–22 mm), and lack of metallic silver-gray color of upper stems and branches (occasional plants of *H. chapmanii* show some of this color).

It inhabits cypress-gum ponds, small lakes, natural depressions, and borrow pits in eleven counties in the Florida panhandle. Range map 2.

3. Hypericum exile P. Adams has an odd looking gestalt: a wand-like aspect with a few short branches, or unbranched. The sepals and capsules are long (6–7 mm and about 7 mm, respectively, according to Godfrey and Wooten 1981) in contrast with the much shorter sepals and capsules of *H. fasciculatum* and *H. nitidum.* The leaf midrib is pale green or pale greenish tan, unlike the darker color in *H. fasciculatum* and *H. nitidum.* This pale color hardly contrasts with the color of the abaxial surface.

Hypericum exile is restricted to five counties in the Florida panhandle, where it inhabits periodically wet flatwoods and savannas. Range map 3.

Robson (1996) treated *Hypericum exile* as *H. nitidum* subsp. *exile* (P. Adams) N. Robson. He also attributes this taxon to western Cuba, citing several specimens. He states that it is more variable in Cuba than in Florida, but gives no data to support his decision to consider Cuban material identical with Florida material. Adams (1962) considered all plants of the *H. fasciculatum* complex occurring in Cuba to be "closest to *H. nitidum*" and places them in *H. nitidum* without additional comment. Adams (1973) repeated this course of action. I have not examined Cuban specimens.

4. Hypericum fasciculatum Lam., *H. nitidum,* and *H. galioides* have the same gestalt: a single main trunk with many branches forming a roughly rounded crown, long leaves, and wetland habitats. The trunk and oldest branches of *H. fasciculatum* have thickened bark with a spongy or corky texture; the outer layers peel off in thin sheets to reveal a pale cinnamon or pinkish-tan color, in marked contrast

to the bark of *H. nitidum* and *H. galioides*, which is thin and dark and which peels off in small narrow strips or not at all. Although all species of this group of *Hypericum* have fascicled leaves, in *H. fasciculatum* they are generally more numerous and densely packed than in other species; this comparative character can be used with caution in separating vegetative *H. fasciculatum* from *H. nitidum*. Another gestalt character is the more or less cut-off leaves of *H. fasciculatum*, as if someone clipped the fascicles with scissors. The clipped fascicles often give a "neat" appearance to the branches, and expose a good bit of the twig between nodes. Some specimens show this character well; others do not, so caution is advised. Populations in the Sandhills of the Carolinas have shorter leaves on average than elsewhere; otherwise I find no differences among populations rangewide. A crucial character of *H. fasciculatum* is the short inflorescence with flowers at only 1–3 nodes, in marked contrast to all other needle-leaved species except *H. chapmanii*. This inflorescence character becomes critical when other characters of a plant are equivocal.

Pre-Adams determinations of specimens of this and other members of the needle-leaved group were often "*Hypericum fasciculatum,*" without recognizing the diversity actually represented. Thus situation contributed to significant errors in range statements and morphology.

Hypericum fasciculatum inhabits static wetlands, such as Carolina bays, cypress-gum ponds, natural lakes, impoundments, depressions in flatwoods, borrow pits, and roadside ditches; this is in contrast with *H. nitidum* which see. Occasional populations occur in wet streamheads, cypress stringers, and apparently along blackwater streams (Godfrey & Wooten 1981). Records from western Louisiana and eastern Texas are all misidentifications involving *H. galioides* or *H. brachyphyllum*. Range map 4.

5. Hypericum galioides Lam., although not a true member of the needle-leaved group, often produces narrow-leaved forms; in fact, populations west of the Mississippi River almost always produce slender leaves. Leaves of these plants become strongly revolute in drying and many specimens were originally determined as *H. fasciculatum* or *H. nitidum*. However, *H. galioides* can be told by these features: leaves oblanceolate or oblinear (vs. parallel sides), most or all leaves (vs. few or none) showing exposed abaxial surface, abaxial surface usually with obvious venation (vs. none), and elongate inflorescence with flowers at 3–7 nodes (vs. 1–3 in *H. fasciculatum*). Slender-leaved plants of *H. galioides* are vexingly similar to *H. brachyphyllum*, which has similar-sized leaves, corollas, and fruits. From *H. brachyphyllum, H. galioides* differs in its linear-oblanceolate leaf shape (slightly broadened distally, vs. linear and with completely parallel sides), in its convex adaxial leaf surface (vs. plane), and in in the exposure of abaxial leaf surface in at least several leaves (vs. few or none). Due to its variable size, wide distribution, and broad range of habitats, familiarity with *H. galioides* is fundamental to understanding the true needle-leaved species.

Habitats include ponded depressions, cypress-gum ponds, beaver ponds, impoundments, floodplain swamps, wet savannas, flatwoods, and ditches. Range map 5.

6. Hypericum lissophloeus P. Adams is not likely to be confused with any other species, due to its very tall stature (2–4 meters), narrow crown, and tree-like aspect. *Hypericum chapmanii* occasionally produces similar-looking plants, but *H. lissophloeus* differs in its pronounced metallic silver-gray color to upper trunk and limbs, glaucous or glaucescent leaves, and large corollas (at 20–22 mm the largest in the group).

Hypericum lissophloeus inhabits sinkhole ponds in deep sand deposits of Bay and Washington Counties, Florida. Range map 6.

7. Hypericum lloydii (Svenson) W.P. Adams and *H. tenuifolium* are the only species in the needle-leaved group that normally inhabit dry soils. Moreover, they are the smallest in stature, never exceeding 0.5 m tall. *Hypericum lloydii* is a compact, bushy-branched shrublet. Among the short species of the group (*H. brachyphyllum, H. lloydii, H. tenuifolium*) *H. lloydii* has the smallest corollas (10–12 mm diameter) and longest leaves (13–25 mm).

Hypericum lloydii inhabits dry to mesic roadsides, powerlines, semi-shaded rocky or sandy slopes, and openings in oak-hickory-pine woodlands. Its distribution is unique within the needle-leaved group in that it occupies a narrow band of the lower piedmont and inner coastal plain (Sandhills region). Disjunct populations occur on outcrops of Altamaha Grit sandstone in Turner and Coffee counties in southern Georgia. While numerous in the Carolinas, *H. lloydii* is apparently rare elesewhere. Range map 7.

8. Hypericum nitidum Lam. resembles *H. fasciculatum*, with which it has been much confounded, but differs in a number of features. The leaf fascicles never look clipped like those of *H. fasciculatum* and are more widely distributed and expose less of the twig between nodes, thus giving *H. nitidum's* branches an unkempt appearance. If on a few leaves the abaxial surface may be seen, the surface is much paler than the inrolled margins, in contrast to *H. fasciculatum*. Two excellent characters are the number of flowering nodes (3–7 for *H. nitidum*, 1–3 for *H. fasciculatum*) and dark, thin (not corky) bark that does not flake off in large sheets or strips to reveal a pale cinnamon color as in *H. fasciculatum*.

Hypericum nitidum normally inhabits the margins of blackwater rivers, streams, and flatwoods drainageways, in contrast with the usually static waters inhabited by *H. fasciculatum*. On the East Gulf Coastal Plain, *H. nitidum* is often a dominant where blackwater streams meet estuaries (i.e., fresh-tidal zones), in the company of *Sarracenia leucophylla, Eriocaulon decangulare, Macranthera flammea*, and other seepage bog plants. Locally, *H. nitidum* inhabits borrow pits and roadside ditches.

Reports of *Hypericum nitidum* from Brunswick County, North Carolina (Adams 1962; Godfrey & Wooten 1981) are not supported by vouchers that I have seen and likely pertain to specimens of *H. brachyphyllum*. All *"nitidum"* specimens examined from Louisiana, Mississippi, and from west of Mobile Bay in Alabama prove to be misidentified; thus, *H. nitidum* does not range west of the Alabama-Tensaw River estuary. I have seen one specimen from central Florida: "Salt Springs, Ocala NF", 3 Jun 1929, *Ashe s.n.* (NCU), and S. Crockett (pers. comm.) has seen a specimen from adjacent Lake County. Range map 8.

Hypericum nitidum was attributed to Cuba and Belize by Robson (1996), as *H. nitidum* subsp. *cubense* (Turcz.) N. Robson. One of the specimens he cited is *Howard 5201* (many herbaria). Two duplicates are at NCU. The general aspect of the branches is like *nitidum*—fascicles not dense, leaves without the "clipped" look of *H. fasciculatum*, unkempt appearance, longest leaves up to 16 mm—but other aspects contradict identity with *H. nitidum* (and with *H. exile*): (1) The abaxial leaf surface is barely or not paler than inrolled margins, contra *H. nitidum* and *H. exile*. (2) The inflorescence consists of 1–3 nodes, contra *H. nitidum* and *H. exile* (both with 3–7 nodes). (3) Plants are extremely short for *H. nitidum*: Howard's labels state "low woody herb seldom to 1 1/2 feet." This is short even for *H. exile*. (4) The habitat is dry: Howard's labels state "dry open grassy meadow," in marked contrast with *H. nitidum* and *H. exile*. Based on this admittedly small sample, I am of the opinion that taxon *cubense* does not belong with *H. nitidum*.

9. Hypericum tenuifolium Pursh (= *H. reductum* P. Adams) has the shortest leaves of any of the needle-leaved group. Godfrey and Wooten (1981) stated that leaves do not exceed 5 mm, but plants

in the Carolinas routinely have leaves 4–10 mm long. A key character is the long capsule, 6–9 mm, much longer than other short statured species.

In North and South Carolina *Hypericum tenuifolium* inhabits moist to dry sandy flatwoods, sandrims of Carolina bays, and ecotones of depression ponds; southward it also inhabits maritime interdune swales, pine-scrub oak sandhills on inland or "fossil" dunes, and pond ecotones.

On the Gulf Coast of Florida there is a gap in distribution between Pasco and Franklin Counties, with the exception of Dixie County. Apparently this gap reflects a lack of dune and sand ridge habitats. Range map 9.

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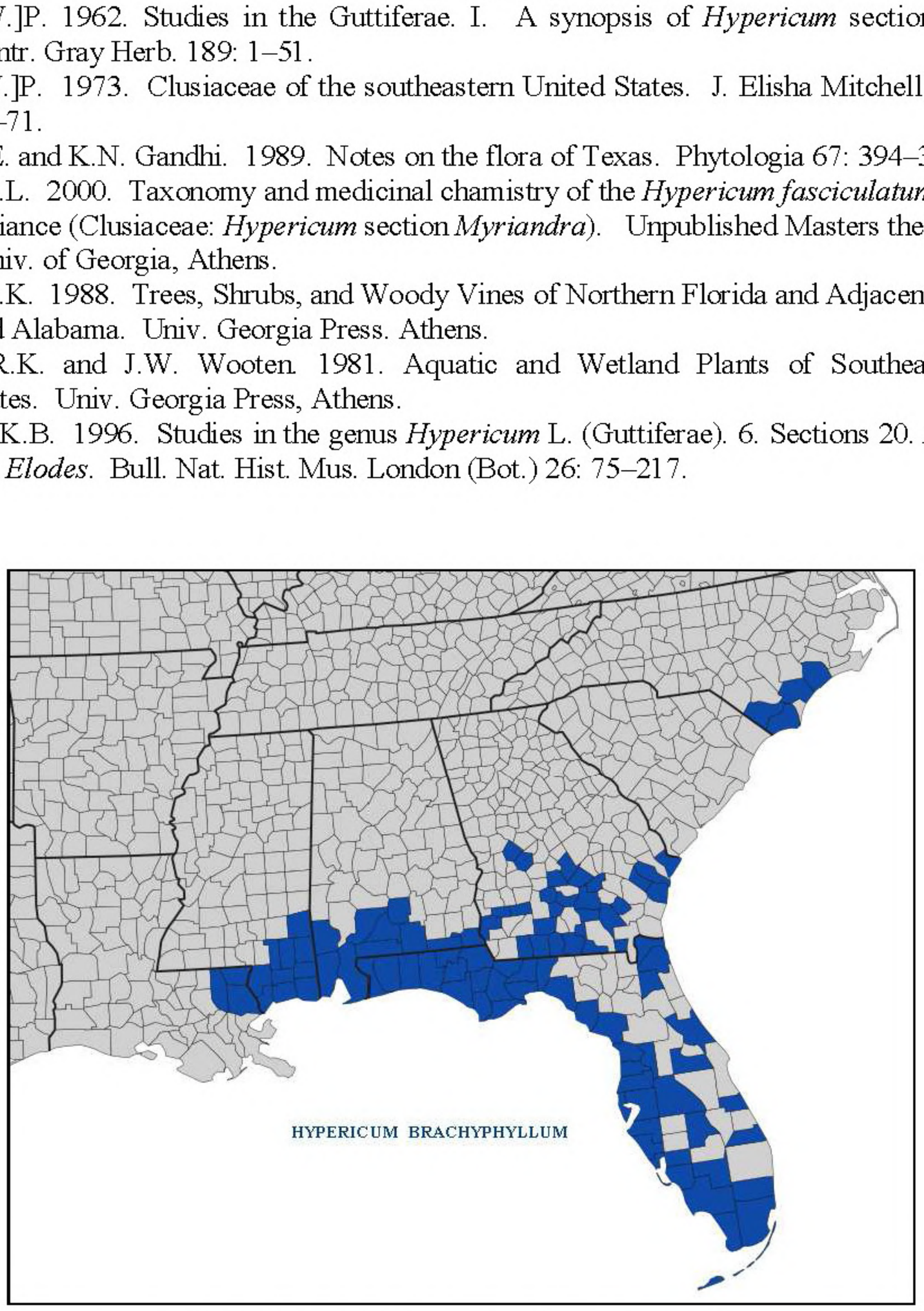

Figure 1. Distribution of *Hypericum brachyphyllum*.

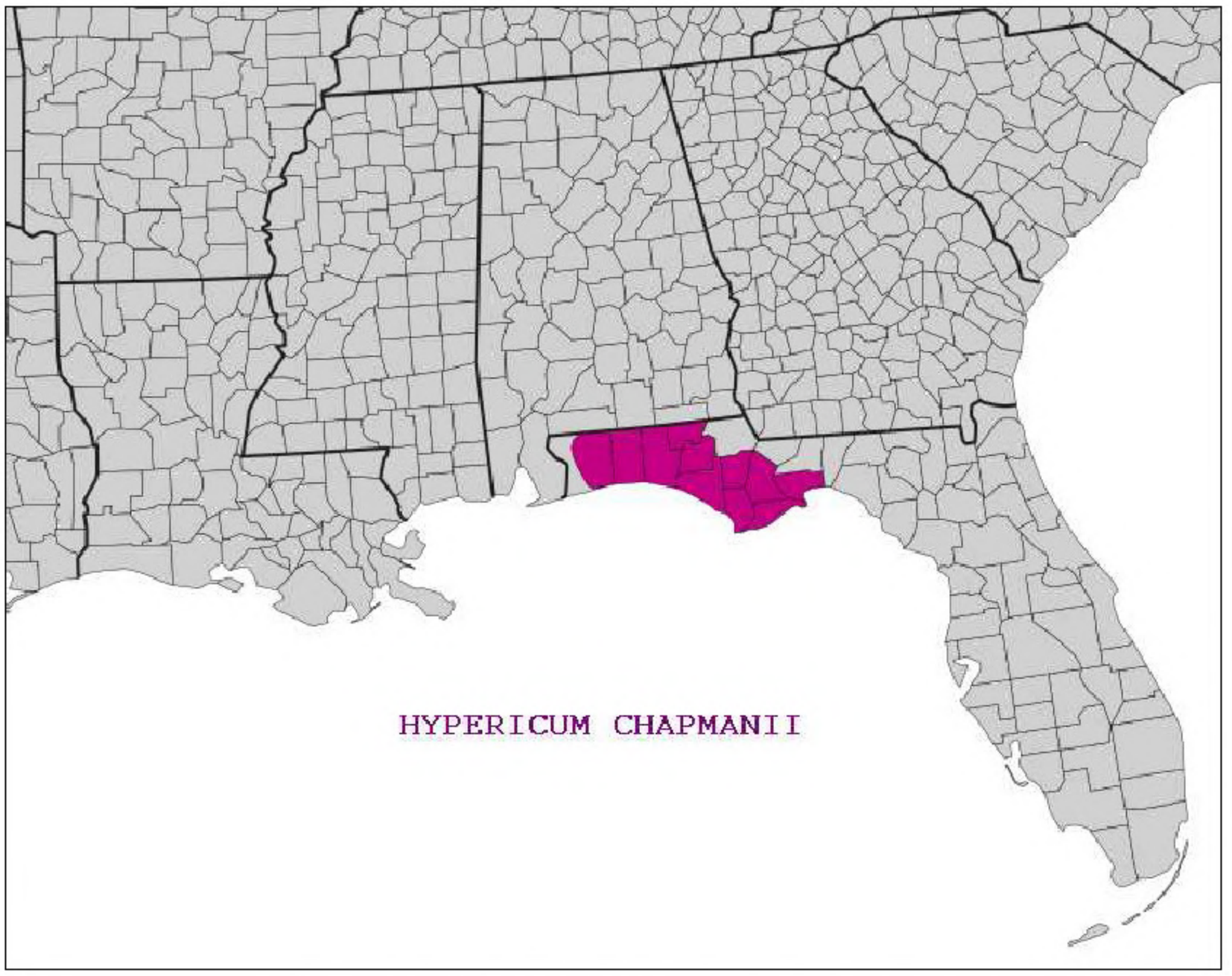

Figure 2. Distribution of *Hypericum chapmanii*.

Figure 3. Distribution of *Hypericum exile*.

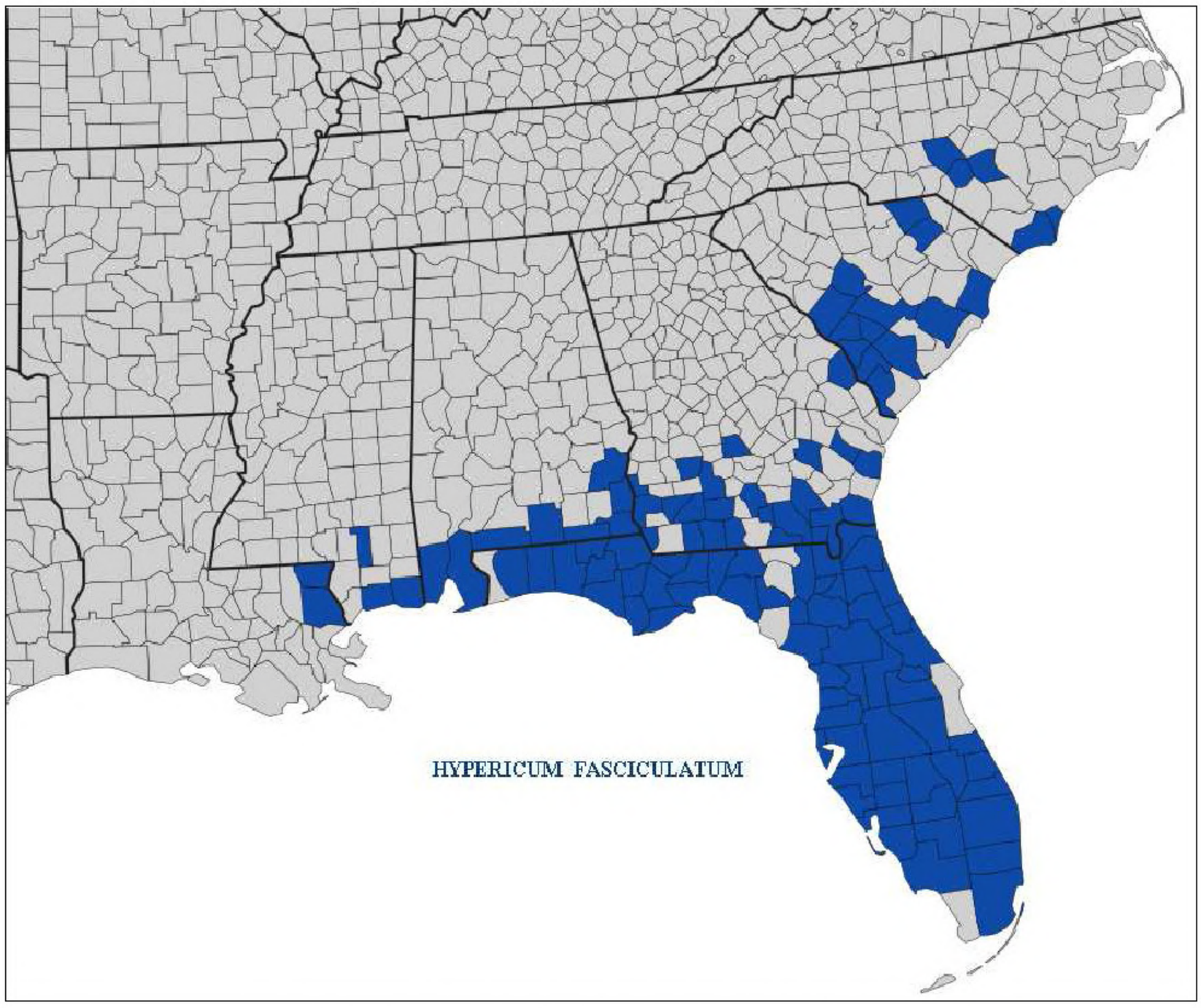

Figure 4. Distribution of *Hypericum fasciculatum*.

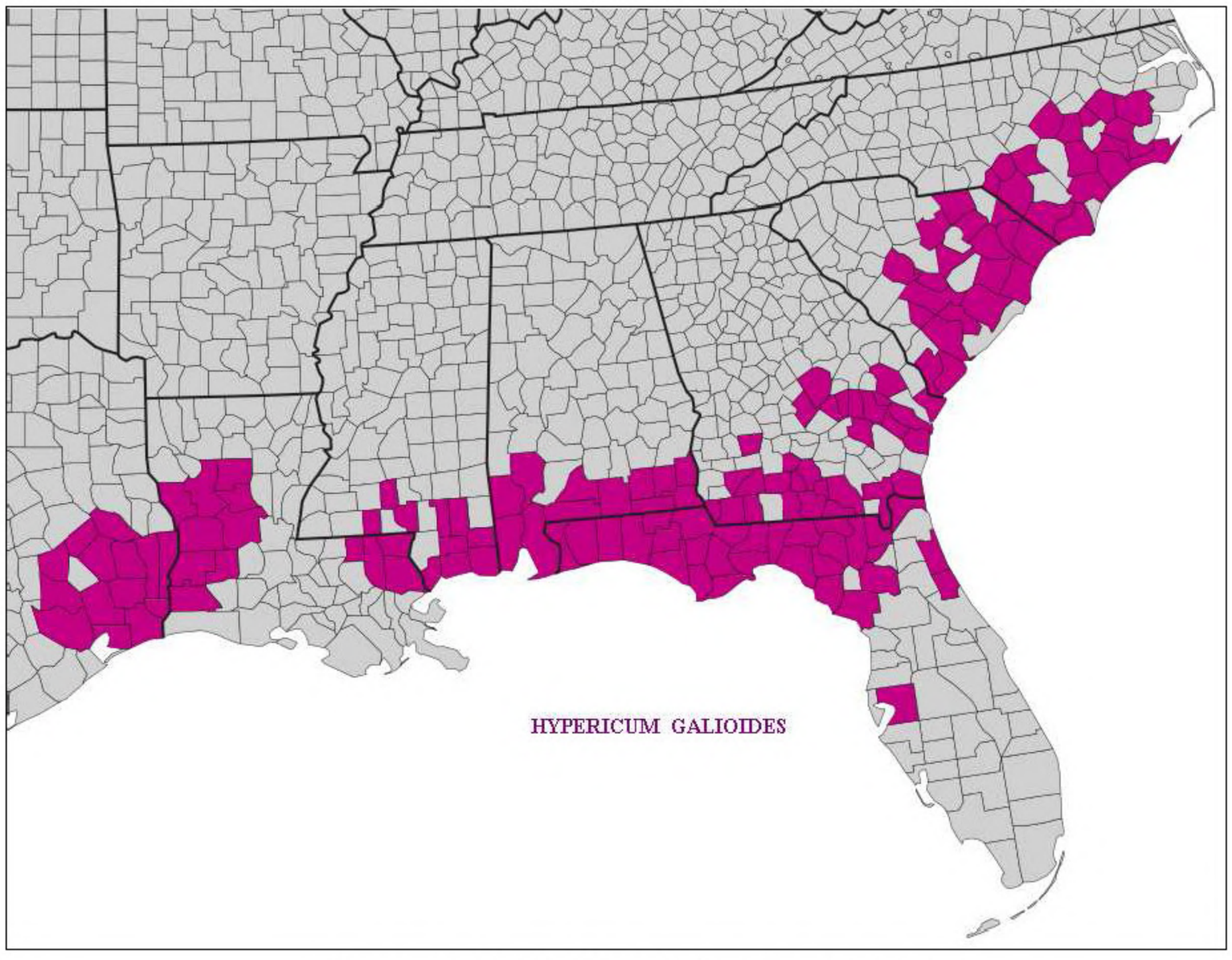

Figure 5. Distribution of *Hypericum galioides*.

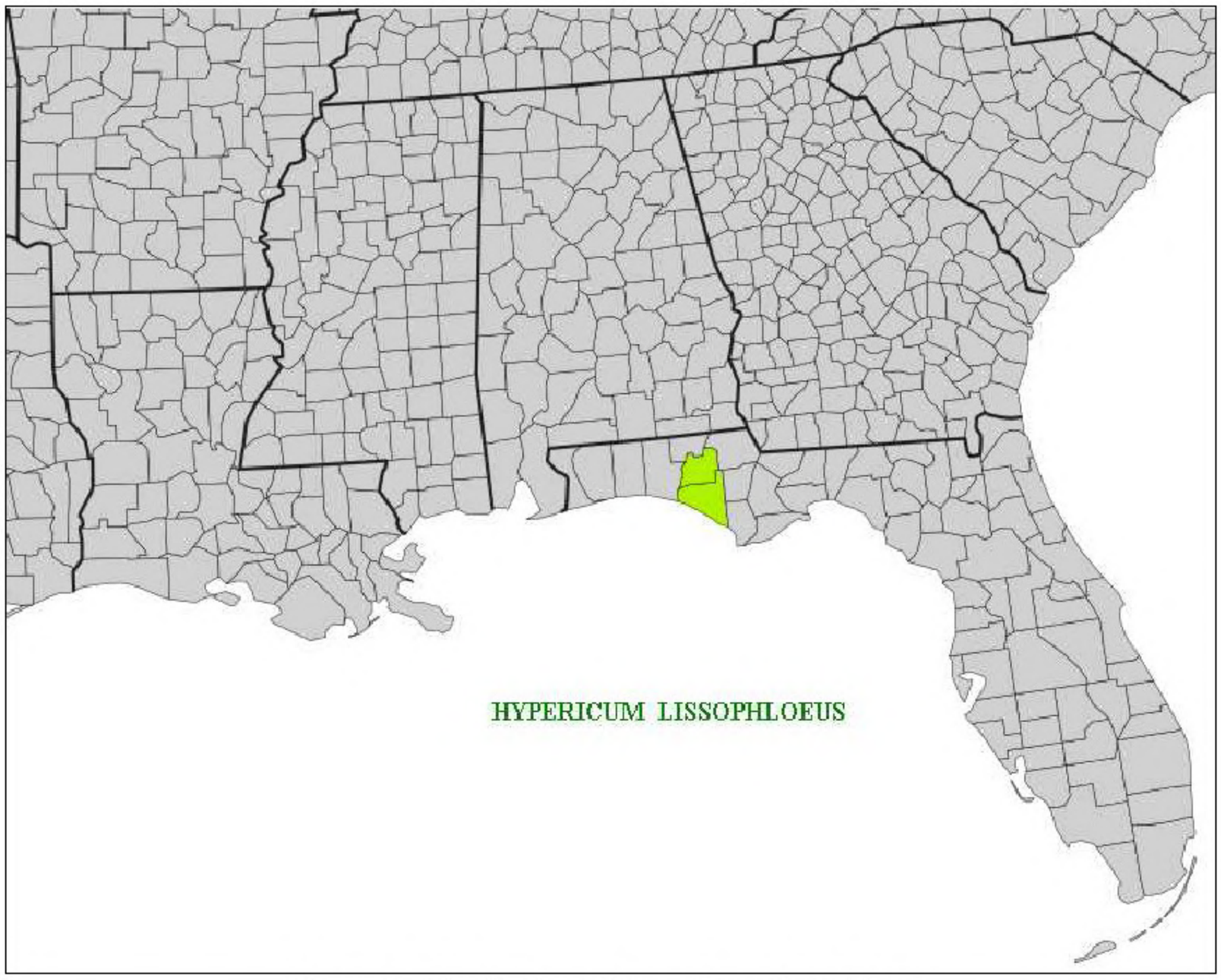

Figure 6. Distribution of *Hypericum lissophloeus*.

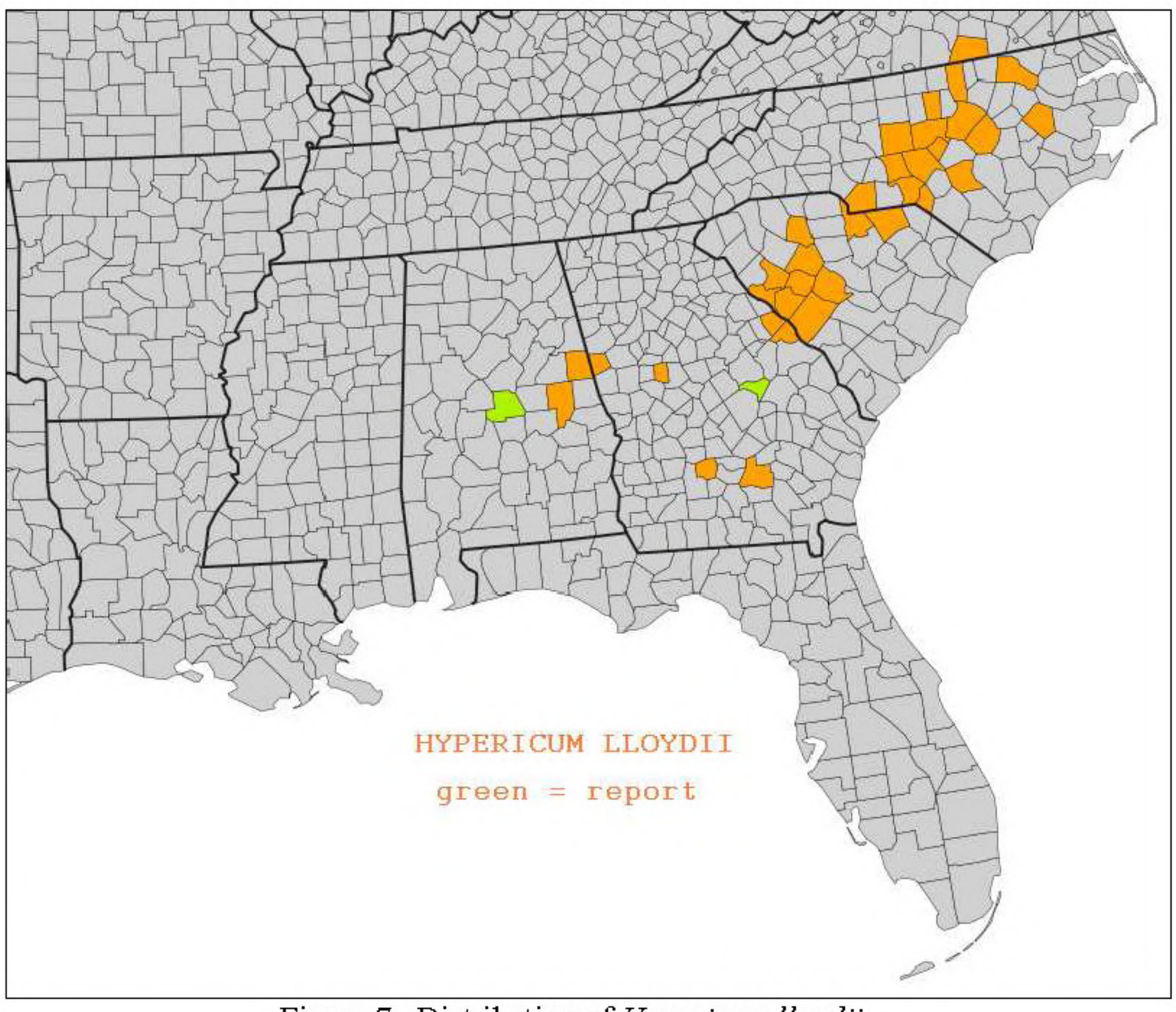

Figure 7. Distribution of *Hypericum lloydii*.

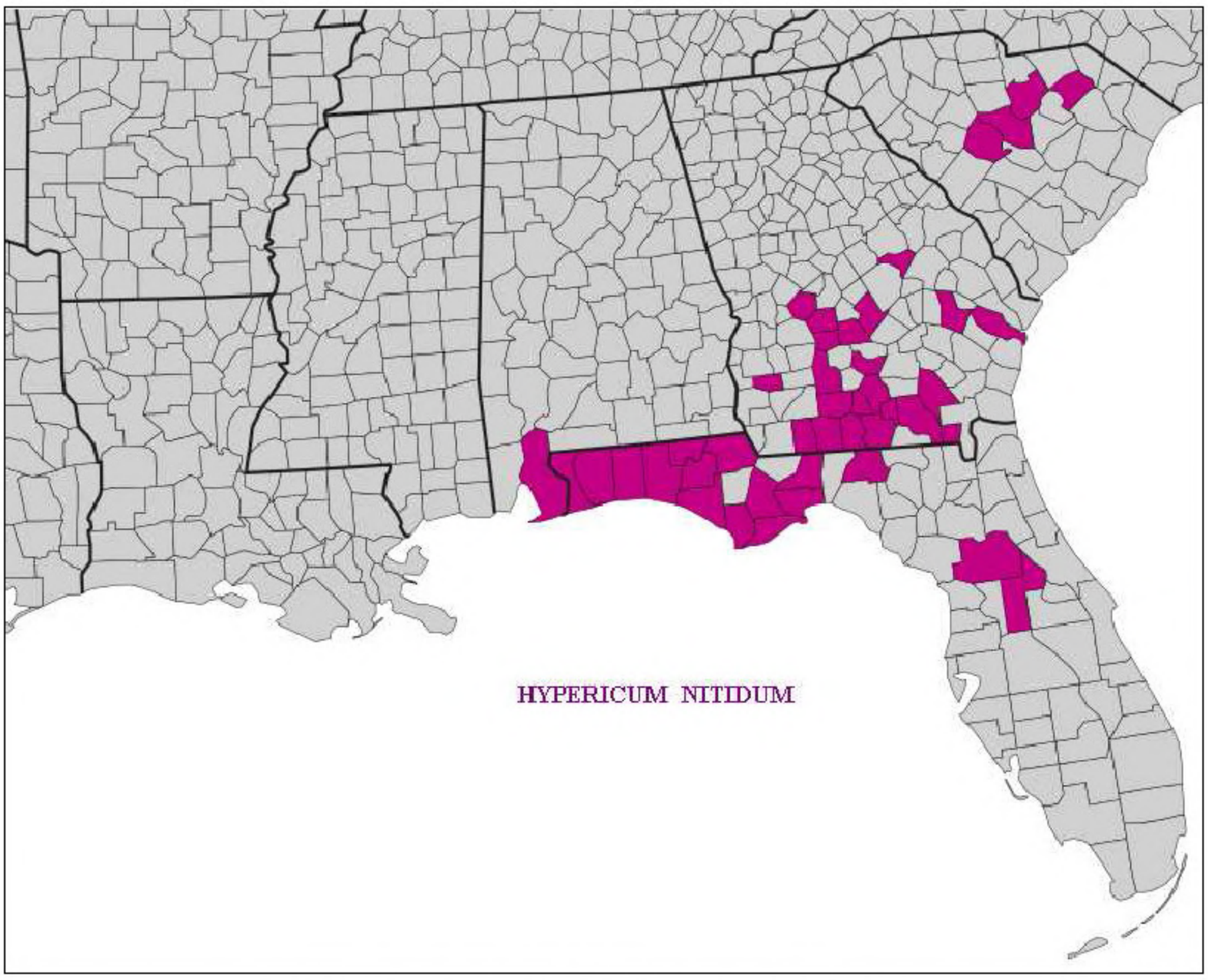

Figure 8. Distribution of *Hypericum nitidum*.

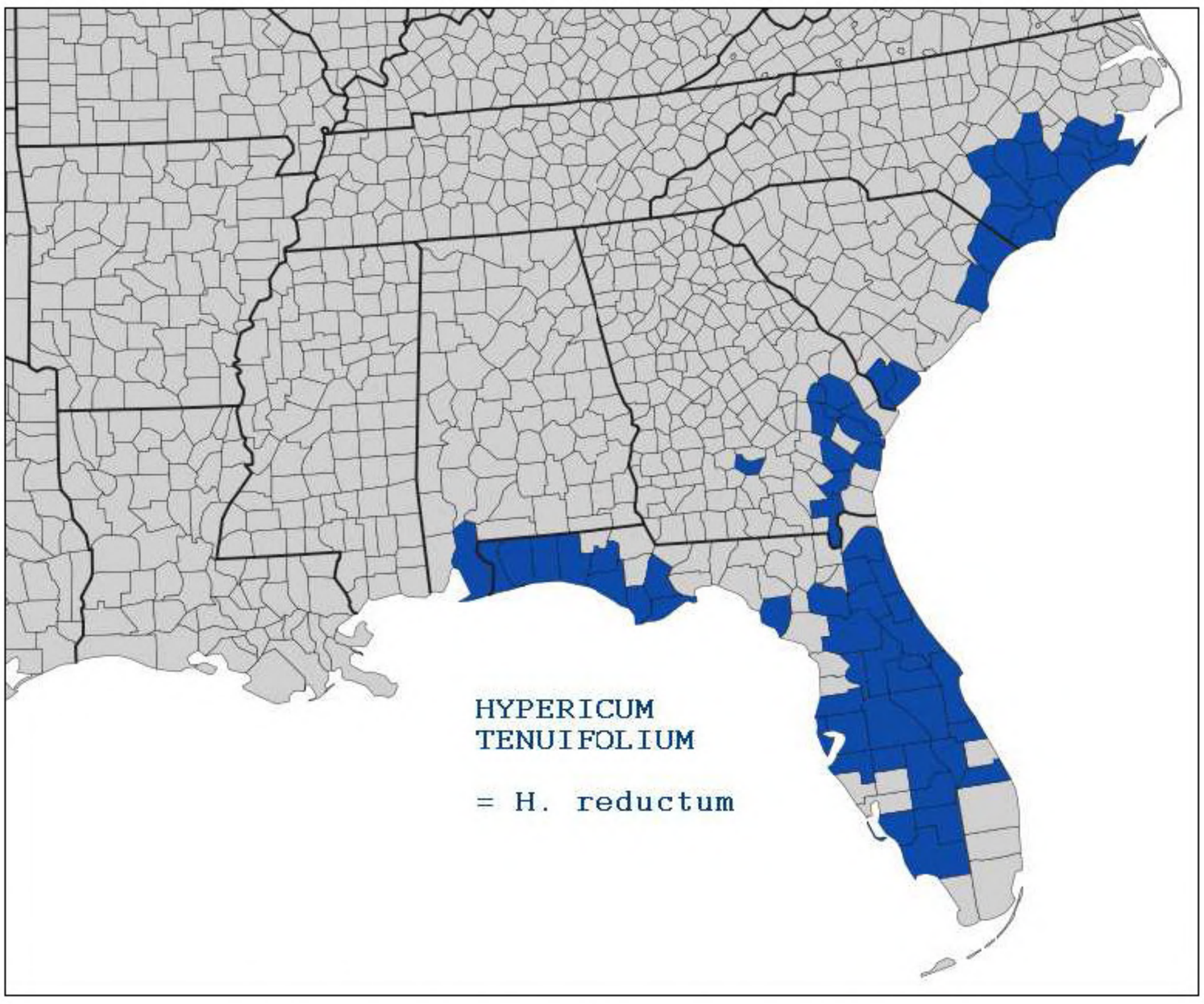

Figure 9. Distribution of *Hypericum tenuifolium*.

APPENDIX 1
Selected Specimen records

1. Hypericum brachyphyllum. **Alabama.** Baldwin Co.: sand dunes, Ft. Morgan peninsula, 28 Jul 1954, *Demaree 59903* (NCU); Conecuh Co.: hillside seepage bog 3–4 mi W of Castleberry, 11 Sep 1989, *Orzell & Bridges 11731* (NCU, TEX); Geneva Co.: pond cypress depression by County Road 4, 12 Sep 1995, *Sorrie 8589* (AUA, NCU). **Florida.** Collier Co.: grassy prairie surrounded by pond cypress swamp, 20 Sep 1965, *Ward 5233* (NCU); Citrus Co.: hardwood swamp, Chassahowitzka, 7 Oct 1972, *Genella & Fleming 1601* (NCU); Duval Co.: near Jacksonville, 3 Jul 1891, *Sudworth 888* (NCU); Wakulla Co.: wetland limestone savanna E of St. Marks Refuge, 14 Sep 1989, *Orzell & Bridges 12099* (TEX). **Georgia.** Calhoun Co.: edge of low pine woods, 26 May 1961, *Adams 793* (USF); Pierce Co.: borrow pit 0.2 mi N of Alapaha River, 9 Jun 1967, *Bozeman 9404* (NCU); Taylor Co.: Little Whitewater Creek by Georgia 137, 12 Aug 2002, *Kral 93044* (TEX). **Louisiana.** St. Tammany Par.: roadside ditch S of Talisheek, 20 Oct 1990, *Brown 15023* (TEX); Tangipahoa Par.: near Hammond, 15 Jun 1929, *Ashe s.n.* (TEX). **Mississippi.** Hancock Co.: acid savanna 1 mi N of Necaise, 6 Jul 1967, *Jones 14122* (USF); Jackson Co.: pine meadows about halfway between Pascagoula and Fontainebleu, 22 Aug 1962, *Harper 4532* (NCU); Wayne Co.: 5 mi N of State Line, low wet grassy flat in open pineland, 18 Jul 1956, *Ray, Jr. 7046* (USF). **North Carolina.** Brunswick Co.: Camp Branch Savanna, 23 Sep 1994, *LeBlond 4115* (NCU); Columbus Co.: Schulkens Savanna on S.R. 1928, 6 Aug 1994, *LeBlond 3999* (NCU); Onslow Co.: Haws Run Mitigation Site, 14 Jun 2003, *LeBlond 5771* (NCU); Pender Co.: Shaken Creek Savanna, 9 Oct 2002, *LeBlond 5736a* (NCU).

2. Hypericum chapmanii. **Florida.** Franklin Co.: shallow ponds near Apalachicola, 1893, *Chapman 5735a* (GH, NCU); Holmes Co.: pond margin near Bonifay, 23 May 1930, *Blanton 6560* (GH); Liberty Co.: *Taxodium ascendens* stringer in wet savanna, 3 mi sw of Kern, Apalachicola National Forest, 1989, *Orzell & Bridges 12061* (GH, NCU); Walton Co.: Grayton Beach, boggy area by stream running into Deer Lake, 31 Jul 1983, *Godfrey 80824* (FSU).

3. Hypericum exile. **Florida.** Gulf Co.: 2.5 mi SE of Port St. Joe, pine flatwoods, 18 Jun 1958, *Adams 456* (DUKE, FSU, GH); Liberty Co.: sandy-peaty shallow ditch by forest road 123C, Apalachicola National Forest, 18 Aug 1989, *Godfrey* (GH). **Cuba.** Prov. Pinar del Rio, *Britton & Crowell 9618* (F, GH, K, MO, NY).

4. Hypericum fasciculatum. **Alabama.** Covington Co.: Conecuh National Forest, Forest Service road 96, seepage bog, 12 Jul 1995, *LeBlond 4319* (NCU); Geneva Co.: seepage bog in longleaf pine sandhills W of Geneva, 25 Jul 1968, *Kral 31994* (NCU); Mobile Co.: pine barren flats, hwy 163 between Mobile and Dauphin Island, 3 Jun 1967, *Lelong 3210.1* (NCU). **Florida.** Alachua Co.: 1 mile E of hwy 24 on 232, 8 May 1965, *Wiggins 20014* (NCU); Hernando Co.: wet prairie, section 11 & 12, 19 Sep 1959, *Cooley 7040 (*NCU); Polk Co.: Tiger Creek Preserve, ephemeral pond edges, 28 January 2008, *Corogin TC624* (TEX); Wakulla Co.: wet thickets, January 1929, *Ashe s.n.* (TEX). **Georgia.** Charlton Co.: powerline right-of-way, east side of Folkston and just north of GA 40, 25 May 1999, *Nelson 20452* (GA, USCH); McIntosh Co.: wet depression along GA 99 S of Eulonia, 20 Oct 1987, *Angerman s.n.* (NCU); Worth Co.: *Cypress-Ilex-Hypericum* pond on Ga. 32, 15 Jun 1967, *Bozeman 9987* (NCU). **Louisiana.** St. Tammany Par.: wet pine savanna, 11 November 1990, *Urbatsch 6929* (NCU); Washington Par.: wet hardwood forest, 1 Oct 1982, *Taylor 2227* (USF). **Mississippi.** Forrest Co.: Shelby State Park, 7 Jun 1964, *Jones, Jr. 1864* (NCU); Harrison Co.: De Soto National Forest, Forest Service road 426, seepage bog, 15 Aug 1996, *Sorrie 9010* (NCU); Jackson Co.: Orange Grove, 2 May 1954, *Demaree 35057* (GH). **North Carolina.** Cumberland Co.: wet sandy soil, 15 mi S of Fayetteville, 11 Feb 1940, *Totten s.n.* (NCU); Hoke/Moore Co.: Fort Bragg, boggy margin of Johnsons Millpond, 9 Oct 1991, *Sorrie 5967* (NCU). **South Carolina.** Allendale Co.: swamp 1.2 mi SSW of Barton, 30 Jun 1956, *Bell 4001* (NCU); Berkeley Co.: Francis

Marion National Forest, limesink depression SE of route 654, Jun 1997, *McMillan 2636* (NCU); Orangeburg Co.: Branchville Bay e of US 21, 1 Sep 1994, *Nifong 541* (NCU).

5. Hypericum galioides. Alabama. Baldwin Co.: low woods bordering Tensaw River, 26 Oct 1967, *Lelong 3868* (NCU); Clarke Co.: low roadside ca. 4 mi N of Choctaw Bluff, 4 Oct 1966, *Clark 9078* (NCU; Washington Co.: stream margin, Bassetts Creek near hwy 43, 3 Oct 1966, *Clark 8716* (NCU). **Florida.** Columbia Co.: along Fla. 2, halfway between GA state line and Baker County line, roadside ditch in weedy, recently logged pine flatwoods, 11 Jul 1984, *Hansen 10147* (USCH); Levy Co.: highwater mark at edge of floodplain forest, Suwanee River, 22 November 1974, *Godfrey 74133* (NCU); Okaloosa Co.: wet roadside with *Macranthera flammea*, S side hwy 90, 1.8 mi E of 85, 20 Aug 1971, *Musselman 4375* (NCU). **Georgia.** Brooks Co.: margins of slough on Withlacoochee River, 14 Jul 1965, *Faircloth 2195* (NCU); Chatham Co.: mixed woodland on hwy 21, S of St. Augine Creek, 14 Jul 1966, *Bozeman 6149* (NCU); Tattnall Co.: cleared floodplain of Altamaha River, NE of Lane's Bridge, hwy 169, 12 Jul 1966, *Bozeman 5923* (NCU). **Louisiana.** Allen Par.: pine flatwood along hwy 26, 5 mi WNW of Oberlin, 25 Jul 1975, *Allen 6681* (NCU); Calcasieu Par.: moist pine woods, 6 Jul 1950, *Webster & Wilbur 3217* (GA, NCU, TEX); Sabine Co.: pine woods on Peason Ridge Military Reservation, 4 Oct 1980, *Thomas 73842* (TEX); Tangipahoa Par.: wet roadside ditch along LA 1067, 3 mi SW of Robert, 12 Jun 1978, *Allen 8171* (NCU). **Mississippi.** George Co.: swamp forest along Escatawpa River, hwy 612, 24 Jul 1969, *Lelong 5209* (NCU); Hancock Co.: Mississippi Test Facility (NASA), along canal, 7 Aug 1970, *Rogers 4001-A* (NCU); Lawrence Co.: 3 mi SW of Silver Creek, secondary deciduous wood bordering small stream, foot of pine coverered slope, 24 Jun 1957, *Ray, Jr. 8283* (USF). **North Carolina.** Columbus Co.: low cypress savanna SE of Old Dock, *Leonard 1754* (NCU, TEX); Hoke Co.: Redwing Pond, boggy shrub margin, 21 Jul 2002, *Sorrie 10963* (NCU); Pender Co.: swamp forest on Black River, 3 mi W of Montague, 26 Jul 1953, *Radford 7387* (NCU). **South Carolina.** Chesterfield Co.: open, savanna-like hillside bog adjacent to Oxpen Lake in Carolina Sandhills NWR, 5 Jul 1985, *Rayner 2324* (USCH); Dorchester Co.: Givhans Ferry State Park, bottomland below marl bluffs, banks of Edisto River, 14 Jun 1988, *Hill 19588* (USCH, USF); Jasper Co.: flatwoods just north of S-94, ca. 1/3 mile E of I-95; NE of Hardeeville, 15 Jul 1984, *Aulbach-Smith 3136* (USCH). **Texas.** Chambers Co.: freshwater marsh, 1.1 mi S of FM 1985, Anahuac NWR, 14 Jun 2000, *Carr 19031* (TEX); Hardin Co.: cut-over longleaf pine, 5 Sep 1924, *Tharp 3152* (TEX); Montgomery Co.: Lake Houston State Park, utility easement on alluvial terraces, 21 Oct 2003, *Sanders 6261* (TEX); Newton Co.: junction of Big Cow Creek and FM 1416, 24 Sep 2000, *Holmes & Singhurst 11059* (TEX).

6. Hypericum lissophloeus. Florida. Bay Co.: Lake Merial, 15 mi N of Panama City, 1966, *Ward 5958* (NCU); Washington Co.: in sand along margin and in shallow water of Parish Pond, 8 Jun 1990, *Anderson 12882* (FSU).

7. Hypericum lloydii. Alabama. Randolph Co.: 2.8 mi SE of Rock Mills, 1.6 mi E of Bacon Level, large relatively undisturbed granite flatrock above Wehadkee Creek and W of quarry, 31 Aug 1985, *Allison 2518* (GA); Tallapoosa Co.: *Harper 3691* (GH, PH, US). **Georgia.** Coffee Co.: sandstone outcrop on Rocky Creek about 3 mi S of Ocmulgee, 20 Jun 1966, *Bozeman 4591* (NCU); Richmond Co.: Auga, 29 May 1918, *Harbison 14393* (NCU); Turner Co.: Altamaha Grit outcrops, 4 mi N of route 112, 25 Jun 1969, *Faircloth 5855* (NCU). **North Carolina.** Pitt Co.: no data, 9 Jul 1956, *Boyette s.n.* (NCU); Scotland Co.: margin of sand road through moist pine flatwoods, Sandhills Game Land, 25 Jul 1998, *Sorrie 9875* (NCU); Union Co.: roadside powerline by Austin Road, 12 Jul 2010, *Sorrie 12623* (NCU). **South Carolina.** Aiken Co.: Graniteville, 1898, *Eggert s.n.* (MO, NY, US); Chesterfield Co.: Sugar Loaf Mountain, 14 Jun 1918, *Coker s.n.* (NCU); Greenwood Co.: roadside bank on rte. 25, 5.3 mi S of Cuffytown Creek, 24 Jun 1987, *Hill 18124* (NCU). **Virginia.** Mecklenburg Co.: roadside of route 58, 7 Jul 1967, *Seaman 7460* (NCU).

8. Hypericum nitidum. Alabama. Baldwin Co.: *Jack 3004* (GH). **Florida.** Gulf Co.: flatwoods between Panama City and Wewahitchka, 4 May 1926, *Small 12823* (TEX); Marion Co.: Salt Springs, Ocala National Forest, 3 Jun 1929, *Ashe s.n.* (NCU); Santa Rosa Co.: swamp along U.S. 90, Blackwater River e of Milton, 22 November 1966, *Bozeman 8761* (NCU). **Georgia.** Berrien Co.: creek swamp on U.S. 82, E of Enigma, *Bozeman 9932* (NCU); Brooks Co.: road excavation area, 2.8 mi E of Barney, 21 November 1959, *Adams 376* (USF); Dooly Co.: swale in longleaf pineland, *Kral 51607* (TEX); Tattnall Co.: pocosin 1.9 mi NW of Reidsville, 11 Jun 1961, *Ahles 54258* (NCU). **South Carolina.** Darlington Co.: edge of Black Creek near Darlington Country Club, 7 Jul 1940, *Smith 1122* (USCH); Lexington Co.: Black Creek w of Pelion, *Rayner 2569a* (USCH); Richland: Fort Jackson, sand and much of small islands in Colonel's Creek, 16 Jun 1994, *Nelson 15611* (USCH, VDB).

9. Hypericum tenuifolium. Alabama. Baldwin Co.: hwy 182 near Romar Beach, 1 Jun 1977, *Davenport 96* (USF). **Florida.** Lake Co.: dry sand of scrub, Ocala National Forest service road 71, 2 Aug 1962, *Ward 3048* (NCU); Manatee Co.: 1845, *Rugel s.n.* (NCU); Martin Co.: pineland, Jonathan Dickinson State Park, 21 May 1977, *Correll 48587* (NCU); Volusia Co.: scrub near dry pond, road to Benson Spring, 14 April 1953, *Prichard 583* (NCU). **Georgia.** Bryan Co.: fossil dunes, Canoochee River, *Adams 541* (GH, USF); Clinch Co.: low exposed area along rte. 84, 6 mi SW of Homerville, 30 Jun 1998, *McNeilus 98-476* (TEX); Irwin Co.: pine savanna on U.S. 319, 0.7 mile E of Alapaha River, 13 Jun 1967, *Bozeman 9608* (NCU). **North Carolina.** Carteret Co.: recently burned longleaf pine stand about 13 mi W of Morehead City, 9 Jul 1963, *Wilbur 6922* (DUKE, USF); Cumberland Co.: flat pine woods 5.7 mi N of Bladen County line on N.C. 53, 27 Jun 1953, *Ahles 29873* (NCU, USF); New Hanover Co.: Carolina Beach, dry sterile white sand ridge among *Pinus palustris* and *Quercus catesbaei, Godfrey, Pl. Exs. Gr. 1260* (GH, NCU, USF). **South Carolina.** Beaufort Co.: Bluffton, 1874, *Mellichamp s.n.* (GH); Horry Co.: savanna, Conway, 1 Sep 1940, *Schallert s.n.* (GH); Jasper Co.: savannah 2.3 mi SW of Ridgeland on U.S. 17, 26 Jun 1956, *Ahles 15529* (NCU).